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STEPHEN		NLON	GHEBRETINSAE	GHEBRETINSAE, TEMESGHEN	
JONES DAY	_	NUE	ART UNIT	PAPER NUMBER	
CLEVELAND, OH 44114				2611	
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Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)	
	09/934,299	THESLING ET AL.	
Office Action Summary	Examiner	Art Unit	
	Jacob Meek	2611	
The MAILING DATE of this communication app Period for Reply	ears on the cover sheet with the c	orrespondence address	
A SHORTENED STATUTORY PERIOD FOR REPLY WHICHEVER IS LONGER, FROM THE MAILING DA - Extensions of time may be available under the provisions of 37 CFR 1.13 after SIX (6) MONTHS from the mailing date of this communication. - If NO period for reply is specified above, the maximum statutory period w - Failure to reply within the set or extended period for reply will, by statute, Any reply received by the Office later than three months after the mailing earned patent term adjustment. See 37 CFR 1.704(b).	ATE OF THIS COMMUNICATION 16(a). In no event, however, may a reply be tim rill apply and will expire SIX (6) MONTHS from cause the application to become ABANDONE	I. lely filed the mailing date of this communication. D (35 U.S.C. § 133).	
Status			
1) ☐ Responsive to communication(s) filed on <u>28 December</u> 2a) ☐ This action is FINAL . 2b) ☐ This 3) ☐ Since this application is in condition for allowant closed in accordance with the practice under Expression in the practice of the	action is non-final. ace except for formal matters, pro		
Disposition of Claims			
4) Claim(s) 5,23,39,50,63 and 81 is/are pending in 4a) Of the above claim(s) is/are withdraw 5) Claim(s) is/are allowed. 6) Claim(s) 5,23,39,50,63 and 81 is/are rejected. 7) Claim(s) is/are objected to. 8) Claim(s) are subject to restriction and/or Application Papers 9) The specification is objected to by the Examiner 10) The drawing(s) filed on is/are: a) access Applicant may not request that any objection to the consequence of the property of the pr	election requirement. epted or b) objected to by the Edrawing(s) be held in abeyance. See on is required if the drawing(s) is obj	e 37 CFR 1.85(a). ected to. See 37 CFR 1.121(d).	
Priority under 35 U.S.C. § 119			
12) Acknowledgment is made of a claim for foreign a) All b) Some * c) None of: 1. Certified copies of the priority documents 2. Certified copies of the priority documents 3. Copies of the certified copies of the priori application from the International Bureau * See the attached detailed Office action for a list of	s have been received. s have been received in Application ity documents have been received (PCT Rule 17.2(a)).	on No ed in this National Stage	
•			
Attachment(s) 1) Notice of References Cited (PTO-892) 2) Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date	4) Interview Summary Paper No(s)/Mail Da 5) Notice of Informal P 6) Other:		

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. Claims 5, 39, 63, and are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Review of these method claims in view of interim guidelines does not reveal a practical application for these claims. While claims disclose the determination / calculation of symbol phase, there is no further use for this operation claimed that would render a tangible result for the symbol phase determination, and therefore it is held these claims are non-statutory.

Response to Arguments

2. Applicant's arguments filed 12/28/05 have been fully considered but they are not persuasive.

With regard to applicant's argument regarding oversampling and correlation. First, review of previously cited art, in examiner's opinion, indicates that correlation function and sampling ratio are linked and that an increase in sampling ration provides a higher resolution result. Examiner further notes that a variety of oversampling rates have been disclosed in the literature (2x (minimum), 4x, 8x, etc.) and, that correlation functions are understood to be related to sampling rates by virtue of their operation. Review of applicant's specification does not state that this is a particular problem being solved by virtue of the 5 point correlation function claimed by applicant, and therefore it appears that this 5 point correlation function is a design choice in view of known use of oversampling and correlation functions.

3. Restatement of previous rejections.

Claims 5, 23, 39, 50, and 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huber et al (US-6,618,452) in view of Fechtel et al (Efficient FFT and equalizer implementation for OFDM receivers; Consumer Electronics, IEEE Transactions on Volume 45, Issue 4, Nov 1999 Page(s):1104 – 1107) in further view of Sayeed (US-6,456,653).

With regard to claim 5, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: receiving a sampled waveform containing a record of symbols imposed on a carrier signal (see column 3, lines 44 – 50 and figure 5A, 503), determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 - 12 and figure 5A), calculating phase ambiguity of the burst information (see column 10, lines 4 - 12); and indexing an arrival time of the burst information (see column 3, lines 54 - 59). Huber is silent with respect to location of down conversion in his system. Fechtel discloses a receiver carrier and timing synchronization processing occurring prior to down conversion (see figure 1). It would have been obvious to one of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph). Huber discloses the use of trigonometric functions for correlation (see column 16, MMSE Criterion Section where equations shown are transforms of trigonometric functions). Huber is silent with respect to sampling rate (5-point correlation) of his system. Sayeed discloses means for determining sampling rate requirements (see column 3, lines 12 - 36). Based on Sayeed's disclosure, it is deemed that the sampling rate is a design choice dictated by system characteristics in lieu of a clear statement regarding the necessity of 5 times oversampling.

With regard to claim 23, the functions of the apparatus are an embodiment of the method of Huber as discussed in claim 5, and therefore would have been obvious in view of the aforementioned rejection of claim 5.

With regard to claim 39, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: receiving a sampled waveform containing a record of symbols imposed on a carrier signal (see column 3, lines 44 – 50 and figure 5A, 503), determining

symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 - 12 and figure 5A), processing sample waveform to remove carrier signal (see column 3, lines 13 - 30) by: estimating residual carrier phase and frequency (see column 6, lines 44 - 51); and determining phase ambiguity and burst arrival time by detecting a unique pattern of symbol words in record of symbols (see column 3, lines 44 - 59); calculating phase ambiguity of the burst information (see column 10, lines 4 - 12); and indexing an arrival time of the burst information (see column 3, lines 54 - 59), wherein the step of processing further comprises a step of computing a FFT on a fixed block of symbols of record (see figure 26, 501 and column 13, lines 25 - 37). Huber is silent with respect to removal of carrier signal. Fechtel discloses a receiver carrier and timing synchronization processing occurring prior to down conversion (see figure 1). It would have been obvious to one of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph). Huber discloses the use of trigonometric functions for correlation (see column 16, MMSE Criterion Section where equations shown are transforms of trigonometric functions). Huber is silent with respect to sampling rate (5-point correlation) of his system. Sayeed discloses means for determining sampling rate requirements (see column 3, lines 12 – 36). Based on Sayeed's disclosure, it is deemed that the sampling rate is a design choice dictated by system characteristics in lieu of a clear statement regarding the necessity of 5 times oversampling.

With regard to claim 50, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: a waveform sampler for sampling a received waveform imposed on a carrier signal, sampled waveform having a record of symbols (see column 3, lines 44 – 50 and figure 5A, 503), a determinator for determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 – 12 and figure 5A, 505), a resolver for resolving phase ambiguity of the burst information (see column 10, lines 4 – 12 and figure 26, 1st stage processing); a detector for detecting a time of arrival of the burst information (see column 3, lines 54 – 59 and figure 26, 509), an estimator for estimating the phase and frequency of a residual carrier of carrier signal prior to removal of carrier signal (see figure 26 and column 45, lines 25 – 42). Huber is silent with respect to

carrier removal. Fechtel discloses a receiver with carrier removal (see figure 1, I/Q Mix). It would have been obvious to one of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph). Huber discloses the use of trigonometric functions for correlation (see column 16, MMSE Criterion Section where equations shown are transforms of trigonometric functions). Huber is silent with respect to sampling rate (5-point correlation) of his system. Sayeed discloses means for determining sampling rate requirements (see column 3, lines 12 – 36). Based on Sayeed's disclosure, it is deemed that the sampling rate is a design choice dictated by system characteristics in lieu of a clear statement regarding the necessity of 5 times oversampling.

With regard to claim 63, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: receiving a sampled waveform containing a record of symbols imposed on a carrier signal (see column 3, lines 44 - 50 and figure 5A, 503), determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 - 12 and figure 5A), processing sample waveform to in phase and frequency to remove carrier signal (see column 3, lines 13 - 30); calculating phase ambiguity of the burst information (see column 10, lines 4 -12); and indexing an arrival time of the burst information (see column 3, lines 54 – 59), wherein the phase and frequency of a residual carrier of carrier signal is estimated in step of processing prior to removal of carrier signal and prior to a step of down converting to remove residual carrier (see figure 26 and column 45, lines 25 - 42). Huber is silent with respect to removal of carrier signal. Fechtel discloses a receiver carrier and timing synchronization processing occurring prior to down conversion (see figure 1). It would have been obvious to one of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph). Huber discloses the use of trigonometric functions for correlation (see column 16, MMSE Criterion Section where equations shown are transforms of trigonometric functions). Huber is silent with respect to sampling rate (5-point correlation) of his system. Sayeed discloses means for determining sampling rate requirements (see column 3, lines 12 - 36). Based on Sayeed's

disclosure, it is deemed that the sampling rate is a design choice dictated by system characteristics in lieu of a clear statement regarding the necessity of 5 times oversampling.

Claim 81 is rejected under 35 U.S.C. 103(a) as being unpatentable over Huber et al ('452) in view of Fechtel in further view of Sayeed ('653) in further view of GSM TDMA Standard.

With regard to claim 81, Huber discloses a method of processing burst information in a transmission link, comprising the steps of: receiving a sampled waveform containing a record of symbols imposed on a carrier signal (see column 3, lines 44 – 50 and figure 5A, 503), determining symbol phase of record of symbols utilizing one or more metrics (see column 10, lines 4 - 12 and figure 5A); calculating phase ambiguity (see column 10, lines 4 - 12) and arrival time (see column 3, lines 54 - 59) of the burst information. Huber is silent with respect to removal of carrier signal. Fechtel discloses a receiver carrier and timing synchronization processing occurring prior to down conversion (see figure 1). It would have been obvious to one of ordinary skill in the art at the time of invention to perform to utilize this architecture as Fechtel discloses this as a typical receiver configuration (see Section 1, 2nd paragraph). Huber is silent with respect to sampling rate (5-point correlation) of his system. Sayeed discloses means for determining sampling rate requirements (see column 3, lines 12 36). Based on Sayeed's disclosure, it is deemed that the sampling rate is a design choice dictated by system characteristics in lieu of a clear statement regarding the necessity of 5 times oversampling. Huber discloses a variation of preamble detection. GSM TDMA standard specifies a mid-amble training sequence. It therefore would have been obvious to one of ordinary skill in the art to utilize a mid-amble training sequence as this is a known form of training sequence useful for synchronization.

Application/Control Number: 09/934,299

Art Unit: 2611

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacob Meek whose telephone number is (571)272-3013. The examiner can normally be reached on 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571)272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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